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PUC PROJECT NO. 52373

**REVIEW OF WHOLESALE
ELECTRIC MARKET DESIGN**

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**BEFORE THE
PUBLIC UTILITY COMMISSION
OF TEXAS**

TEXAS INDUSTRIAL ENERGY CONSUMERS' MARKET DESIGN PROPOSAL

I. INTRODUCTION

Texas Industrial Energy Consumers (TIEC) appreciates the opportunity to submit a market design proposal for the Commission's consideration. As the Commission is aware, TIEC's members are engaged in energy-intensive businesses that depend on a continuous, reliable electricity supply. For large consumers, it is critical that the ERCOT market ensures appropriate reliability at a reasonable cost.

TIEC has been expressing concerns about the potential reliability impacts of relying on intermittent generation to serve load for more than a decade. Today, ERCOT does not have a shortage of installed capacity by any reasonable standard, and yet ERCOT has experienced increased operational issues and outages due to the unexpected *variable output* of certain resources. To be clear, TIEC is not criticizing renewable technologies for their inherent operating characteristics and believes they offer many benefits to consumers. However, intermittent technologies do not (and today, generally cannot) respond to market incentives in the same way as dispatchable resources. This means that reserve margins may look healthy under antiquated standards like the "one-event-in-ten years" metric based on expected deliveries from intermittent resources, but the market still experiences operational scarcity issues due to wide variability in intermittent output. TIEC urges the Commission to address these *operational* issues in a targeted way that provides additional incentives for resources to be available to ramp quickly or "fill the gap" when intermittent resources do not show up. As explained below, both intermittent and dispatchable resources need to be firmed up. Dispatchable resources are being firmed up through weatherization and securing fuel supply. For intermittent resources, TIEC believes the most targeted way to achieve this is through a new Backup Reliability Service to firm up generation availability based on studied variability. In some ways, TIEC is proposing to adopt a more targeted and permanent approach to the additional operating reserves that ERCOT has been carrying in recent months. If this is done in a transparent manner, where the market knows the quantities, the

rules, and the pricing mechanism, the result should be additional market-based investment that solves the specific reliability problem ERCOT is facing today. This approach would satisfy the requirements of PURA § 39.159(b),¹ improve reliability for customers at a reasonable cost, and provide strong, market-based incentives to resolve the operational variability that has driven reliability concerns in recent years.

In contrast to this targeted approach, capacity markets, forward LSE obligations, and similar “solutions” based on the amount of generating capacity that simply exists in ERCOT—regardless of operational characteristics—will not solve the issues ERCOT is facing. As recent experience has demonstrated, our problem is one of *operational* variability and not total investment or capacity. Mandated forward obligations to purchase capacity are expensive and extremely complicated, requiring thousands of regulatory controls on capacity accreditation, performance standards, and determinations of what loads have to be covered over what periods, who pays for the capacity, and what penalties should be applied and to whom, all to essentially recreate the incentives that naturally exist in a well-designed market. At some point, consumers would be better off under a fully regulated regime, where the Commission can direct investment in the resource mix it desires and consumers would get those resources (and their output) at cost plus a regulated rate of return.

Similarly, proposals that reduce generators’ financial incentive to perform during periods of system stress will actually exacerbate the issues the market is currently facing. For instance, “flattening” the ORDC to create higher prices across all intervals will actually reduce generators’ performance incentives by reducing the amount of their revenues that are earned by being available when it matters, paying them instead for just “existing.” This will raise consumer costs without improving reliability. Paying higher prices as supply diminishes is fundamental to a competitive

¹ PURA § 39.159(b) (“The commission shall ensure that the independent organization certified under Section 39.151 for the ERCOT power region: (1) establishes requirements to meet the reliability needs of the power region; (2) periodically, but at least annually, *determines the quantity and characteristics of ancillary or reliability services necessary to ensure appropriate reliability during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production* in the power region; (3) *procures ancillary or reliability services on a competitive basis to ensure appropriate reliability during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production in the power region*; (4) develops appropriate qualification and performance requirements for providing services under Subdivision (3), including appropriate penalties for failure to provide the services; and (5) sizes the services procured under Subdivision (3) to prevent prolonged rotating outages due to net load variability in high demand and low supply scenarios.”) (emphases added).

market and sends appropriate signals to market participants to increase their output or reduce consumption to balance out the system. It is important to remember that the only entities that are typically exposed to high prices are sophisticated customers that choose not to hedge supply (and who often engage in demand response) and generators who have sold their capacity forward and are obligated to replace energy in the real time market when they fail. Reducing these financial performance incentives may reduce the market risk for large customers and generators, but it will not improve reliability.

As discussed below, a better and more targeted approach is to create market-based incentives to ensure that adequate resources are available to meet the needs of customers under all reasonably defined operational scenarios. To achieve this, both dispatchable and intermittent generation need to be secured and firmed to expected output levels. To achieve this, the Commission should first require ERCOT to better define the scope of the actual reliability problem by studying the variability of both load and generation (including forced outages of dispatchable generation) by season. This will provide a guideline for the quantity of additional dispatchable resources (generation or load response) that need to be online or quickly available, consistent with the requirements of PURA § 39.159(b)(2).² Once this statistical question has been answered, the Commission can define appropriate *operational* reliability goals and acquire a Backup Reliability Service as described below. This additional revenue stream for backup generation will encourage sufficient dispatchable generation to be online and available to avoid system stress and the Backup Reliability Service revenue stream will encourage new dispatchability and, importantly, availability, which is precisely what the ERCOT market needs.

² PURA § 39.159(b)(2) (“The commission shall ensure that [ERCOT] . . . (2) periodically, but at least annually, *determines the quantity and characteristics of ancillary or reliability services necessary to ensure appropriate reliability during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production* in the power region.”) (emphasis added).

i. Dispatchable generation should be required to weatherize and ensure fuel security.

Dispatchable generation units³ should be required to demonstrate their ability to meet availability goals across seasons by appropriately weatherizing and securing their fuel supplies, and pursuant to recent legislation, the Commission is already formulating rules to address these requirements.⁴

ii. ERCOT should firm up generation availability by establishing and procuring a new Backup Reliability Service.

The Commission should implement a Backup Reliability Service based on observed operational variability to ensure that sufficient backup generation is either already online or quickly available to address any operational issues. Generation providing this “backup” service will be compensated in a targeted manner, providing an additional revenue stream and investment incentive for eligible resources.

TIEC’s Backup Reliability Service would go beyond NERC standards for ancillary service and address the unique operational issues ERCOT is actually facing. TIEC’s Backup Reliability Service should be seasonally differentiated, based on the full distribution of generation availability, and available for dispatch outside of emergency conditions. Importantly, many NERC-driven ancillary services are typically only available when the system is in the middle of a reliability event. In contrast, the Backup Reliability Service could be available to “firm up reality to expectations” prior to experiencing a reliability event. In many ways, this service would be similar to the “conservative” operating posture ERCOT has recently implemented, but in a transparent, disciplined way that will facilitate investment in resources to meet the needs of the service. Although ERCOT would centrally procure the majority of the Backup Reliability Service, intermittent resources should have the option to provide their own firming service by building backup or entering into bilateral contracts with physically dispatchable resources like batteries or peaking units. Importantly, this would also satisfy the legislature’s instructions in SB 3 to

³ Dispatchable generation units are those whose output can be controlled by humans. *See* PURA § 39.159(a) (“For the purposes of this section a generation facility is considered to be non-dispatchable if the facility’s output is controlled primarily by forces outside of human control.”).

⁴ *See* Project No. 51840.

“determine[] the quantity and characteristics of . . . reliability services necessary to ensure appropriate reliability during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production in [ERCOT].”⁵

TIEC’s proposal would significantly transform the ERCOT market by creating a permanent, more focused version of ERCOT’s recent *ad hoc* procurement of additional quantities of RRS and NSRS ancillary services. Once ERCOT determines the expected range of generation variability in each season, it can use that information determine how much Backup Reliability Service it should acquire for that season. Essentially, by acquiring sufficient Backup Reliability Service, ERCOT would be able to operate the market more conservatively, while maintaining the benefits of the market construct for customers. Backup Reliability Service would provide a new revenue stream for dispatchable generation that reflects the cost of maintaining dispatchable reserves for firming the energy from intermittent generation. And unlike the current *ad hoc* approach, a permanent Backup Reliability Service product will create predictable, dependable market signals that will facilitate investment in additional reliable generation within ERCOT. This proposal is discussed more fully below.

II. TIEC’S BACKUP RELIABILITY SERVICE PROPOSAL

As discussed at the Commission’s August 26th meeting, Texas has seen a “tremendous amount of investment on the renewable side”⁶ over the past decade. This lopsided investment trend—which is occurring all over the world in one form or another—has created major variations in “expectations versus reality” for reliability. This phenomenon has been largely caused by the uncertainty around the load carrying capability of intermittent resources, where the expectation is created by relying on averages, which often do not reflect reality in real time. PURA § 39.159(b) was meant to empower the Commission to resolve these very issues.

The Commission should require the same level of reliability from intermittent generation as it does from weatherized dispatchable generation and should use its authority under PURA § 39.159(b)(1) to create and scope a new Backup Reliability Service that will allow the market to

⁵ PURA § 39.159(b)(2).

⁶ Barbera Clemenhausen explained in her presentation on August 26 (available at: http://texasadmin.com/tx/puct/work_session/20210826/) at 1:25:40.

firm up non-dispatchable resources. Unlike other market design “solutions” such as flattening the ORDC, adding capacity market elements, or creating LSE requirements, establishing a robust Backup Reliability Service will directly address the actual generation availability and reliability issues that exist in ERCOT today and ensure that dispatchable resources are available to serve Texas consumers under all reasonable operating scenarios.

i. Overview of TIEC’s Backup Reliability Service Proposal

Developing a robust Backup Reliability Service will allow the Commission, ERCOT, and customers to say with confidence that sufficient capacity will show up every day, even if the wind doesn’t blow or the sun doesn’t shine, which is exactly what the legislature hoped to achieve through PURA § 39.159(b). Put simply, the goal of Backup Reliability Service is to create a product that, when combined with the variable output of an intermittent generation resource, will provide the same level of reliability as weatherized and fuel secure dispatchable generation. In other words, Backup Reliability Service will create economic incentives that will ensure that enough firm generation is available to meet the needs of Texas energy consumers. Once the Commission sets an availability standard, ERCOT can determine the amount of firm capacity that is needed based on the anticipated output and variability of intermittent resources, which will change dynamically over time along with conditions on the system.

As contemplated by PURA § 39.159(b)(2), ERCOT will first need to conduct a study to “determine[] the quantity and characteristics of . . . reliability services necessary to ensure appropriate reliability during extreme heat and extreme cold weather conditions and during times of low non-dispatchable power production in the power region.” ERCOT has the intermittent generation data and expertise to conduct this evaluation, and its results will be essential to determining the exact characteristics and quantity of Backup Reliability Service that will be required to address the reliability issues posed by non-dispatchable generation resources. This evaluation will be more complicated than just estimating the capacity contribution of intermittent generation, as Effective Load Carrying Capability (ELCC) calculations hide a wide distribution of likely output from intermittent generation. For example, determining that the ELCC of a wind plant is 24% does not adequately illustrate the variability of that intermittent resource in a particular hour, which will produce sufficient megawatts in one instance and no megawatts in

another.⁷ Additionally, as noted above, more general reliability standards like the dated “1-event-in-10-years” standard do not adequately address the generation availability problems that the market is currently facing. If the Commission’s goal is to steer the system away from reaching emergency conditions, then it should focus on determining the level of availability that is needed from each generator in ERCOT to ensure supply to expected load under all reasonable conditions. The Commission can ensure that this reliability goal is met by enforcing weatherization standards and fuel security requirements for dispatchable units, procuring sufficient Backup Reliability Service in the forward market to compensate for non-dispatchable units that do not self-supply reliability services, and giving non-dispatchable units the option to firm themselves up by building or contracting with dispatchable capacity.

TIEC believes that certain characteristics will be necessary to make Backup Reliability Service work. Importantly, Backup Reliability Service should be available for dispatch well in advance of scarcity conditions to help cushion against reliability events. Additionally, an entity that provides Backup Reliability Service should receive both the forward Backup Reliability Service price and any ORDC payments it is due as reserve generation. This aligns with the original purpose of the ORDC, which was created to value and incentivize investment in operating reserves, both in the short and long term.

ii. Backup Reliability Service would mitigate the impact of intermittent generation variability and incentivize increased dispatchable resources.

TIEC’s Backup Reliability Service proposal would represent a significant policy shift toward operating the ERCOT market in a more reliable manner. The Commission has already tested the waters for such a policy by ordering ERCOT to procure additional RRS and Non-Spin Reserve Service from dispatchable generation as a hedge against reliability issues caused by swings in intermittent generation. Defining that policy and making it more permanent through a formal Backup Reliability Service will increase investors’ confidence that the resulting revenue streams will persist, thereby encouraging additional investment in the kind of dispatchable

⁷ During the Work Session, the Commissioners noted the extreme differences in the MWs produced by Dow’s wind turbines during the month of July 2017. See Commissioner Lake stated that from the Dow graphic, renewables can provide anywhere from 2% and 98% of the energy demand (available at http://www.adminmonitor.com/tx/puct/work_session/20210826/2/) at 3:13 ; see also Work Session Slides for August 26, 2021 at 35 (Aug. 26, 2021).

resources that are necessary to reliably operate a renewable-heavy electric grid. A formal Backup Reliability Service product will also provide more accurate, market-based price incentives to dispatchable resources than the current *ad hoc*, out-of-market approach.

Importantly, Backup Reliability Service could be an extremely flexible tool for ensuring reliability across a wide range of market conditions. Over time, technological developments may reduce the variability of intermittent resources and, by extension, the need for Backup Reliability Service. In that event, ERCOT would simply acquire less of the service, a strong benefit over other proposals that will be more difficult to moderate in the future.

iii. The Commission should consider removing the ORDC adders paid to intermittent resources.

As a corollary to TIEC's Backup Reliability Service proposal, the Commission should consider removing the ORDC adders from the energy price paid to intermittent resources. The ORDC was designed to value reserves, and the ORDC adders to the energy price create an incentive for additional, reliable resources to operate in real time, and to be developed in the future. As has become apparent, intermittent resources are not price responsive, do not provide effective reserves, and are not adequately contributing to long term reliability. Sending ORDC pricing signals to intermittent resources forces consumers to pay more for energy without incentivizing additional reliability. As such, the Commission should consider paying the ORDC adders solely to dispatchable resources that provide both operational reserves and support long-term reliability needs. If the Commission approves the Backup Reliability Service, the ORDC payments would be made to the associated back-up capacity, so, for instance, intermittent resources with adequate on-site backup would receive ORDC for the back-up generation, plus the LMP for the energy from the intermittent resource.

III. LEGISLATIVE INCENTIVES FOR DISPATCHABLE GENERATION

In response to the Commission's directive that "all ideas should be on the table," the Commission should consider recommending that the Texas legislature create incentives for dispatchable generation to level the playing field with existing federal incentives for intermittent renewable generation. As ERCOT has experienced over the past two decades, existing federal subsidies make it more attractive for companies to invest in intermittent renewable resources,

which has caused a relative increase in the cost of capital for dispatchable generation projects, and especially thermal generation.

The Commission should investigate possible approaches that could help lower the cost of capital for generation that meets certain dispatchability criteria. New legislation could create property or margin tax credits for dispatchable generation to compete with existing federal subsidies. Alternatively, the legislature could create a statewide fund to offer grants or low interest financing for new dispatchable generation. Directed legislative intervention to encourage new investment in dispatchable resources would dovetail with TIEC's Backup Reliability Service proposal, which would help companies make an economic case for building the type of resources that are essential to ensuring reliability in ERCOT as the amount of intermittent generation on the grid continues to increase.

IV. CONCLUSION

TIEC appreciates the opportunity to present a more detailed market design proposal, and looks forward to discussing this proposal at the upcoming workshop.

Respectfully submitted,

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**ATTORNEYS FOR TEXAS INDUSTRIAL
ENERGY CONSUMERS**

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Executive Summary

- ERCOT does not have a shortage of installed capacity by any reasonable standard, yet ERCOT has experienced increased *operational* issues and outages due to the unexpected variable output of certain resources.
 - Reserve margins may look healthy under antiquated standards like the “one-event-in-ten years” metric based on expected deliveries from intermittent resources, but the market still experiences operational scarcity issues due to wide variability in intermittent output and forced outages.
 - Commission must address ERCOT’s *operational* issues by creating market-based incentives to ensure that adequate resources are available to meet the needs of customers under all reasonably defined operational scenarios.
 - Capacity markets, forward LSE obligations, and similar “solutions” based on the amount of generating capacity that simply exists in ERCOT—regardless of operational characteristics—will not address these operational issues.
 - Proposals that reduce generators’ financial incentive to perform during periods of system stress, like “flattening” the ORDC, will actually exacerbate the issues the market is currently facing.
- Both intermittent and dispatchable resources need to be firmed up, and the Commission should require the same level of reliability from intermittent and dispatchable generation.
- Dispatchable Resources
 - Dispatchable generation units should be required to demonstrate their ability to meet availability goals across seasons by weatherizing and securing their fuel supplies. As required by SB 3, the Commission is already formulating rules to address these requirements.
- Non-Dispatchable Resources
 - The Commission should use its authority under PURA § 39.159(b)(1) to create and scope a new Backup Reliability Service that will allow the market to firm up non-dispatchable resources.
 - Backup Reliability Service should be seasonally differentiated, based on the full distribution of generation availability, and available for dispatch well in advance of a reliability event.

- Although ERCOT would centrally procure the majority of the Backup Reliability Service, intermittent resources should have the option to provide their own firming service by building backup or entering into bilateral contracts with physically dispatchable resources like batteries or peaking units.
- When combined with the variable output of an intermittent generation resource, Backup Reliability Service should provide the same level of reliability as weatherized and fuel secure dispatchable generation.
- The Commission has already tested the waters for Backup Reliability Service by ordering ERCOT to procure additional RRS and Non-Spin Reserve Service from dispatchable generation as a hedge against reliability issues caused by swings in intermittent generation. Formalizing that policy would send additional investment signals for generation resources that support reliability.
- As a corollary to TIEC's Backup Reliability Service proposal, the Commission should consider removing ORDC adders from the energy price paid to intermittent resources.
 - Sending ORDC pricing signals to intermittent resources forces consumers to pay more for energy without incentivizing additional reliability.
 - Intermittent resources are not price responsive and do not provide effective reserves.
 - If the Commission approves the Backup Reliability Service, the ORDC payments would be made to the associated back-up capacity, so intermittent resources with adequate on-site backup would still receive ORDC payments for the back-up generation, plus the LMP for the energy from the intermittent resource.
- The Commission should consider recommending that the Texas Legislature create incentives for dispatchable generation to level the playing field with existing federal incentives for intermittent renewable generation.
 - Existing federal/ subsidies make it more attractive for companies to invest in intermittent renewable resources, which has caused a relative increase in the cost of capital for dispatchable generation projects.
 - The Commission should investigate possible approaches that could help lower the cost of capital for generation that meets certain dispatchability criteria.
 - New legislation could create (1) property or margin tax credits for dispatchable generation; or (2) a statewide fund to offer grants or low interest financing for new dispatchable generation.